USING WOLLASTONITE FROM BĂIȚA BIHOR (APUSENI MOUNTAINS, ROMANIA) FOR FAST-FIRING CERAMIC GLAZES

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Wollastonite ($CaSiO_3$) with a theoretical chemical composition 48.25% CaO and 51.75% SiO_2 is particularly suitable for reducing shrinkage and increasing strength during fast-firing as well as for improving gloss and reducing surface defects in glazes. During firing, a minimum volume of gas is generated as compared to other traditional materials, resulting in a smooth surface with diminished pinholing. Wollastonite is the main source of CaO flux in glazes (and bodies) instead of lime. Since wollastonite contains silica as well, glaze recipes employing it do not need as much raw silica powder. In fast-fired glazes wollastonite smooths out rapidly and completely, and the SiO_2 and CaO react more readily to form silicates.

The polymetallic skarn ores from Băița Bihor, Bihor Mts., developed in fractures cutting carbonate-rich Triassic deposits, contain about 100 various mineral species. Among them, wollastonite aggregates (up to 20 cm in diameter) locally form nearly monomineralic bodies.

Fibrous white wollastonite aggregates were characterized by means of X-ray diffraction (XRD) and optical microscopy.

In order to test the wall tiles ceramic glazes, 5, 10 and 15% wollastonite were introduced into the recipe. The thermal treatment was conducted for 45 minutes between 1130-1140 °C.

The obtained ceramic glazes showed an increased mechanical strength, a better resistance again acid corrosion and an improved gloss.